

# Hobbies

## WEEKLY

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## How the handyman should undertake RUSTIC WOODWORK

**R**USTIC woodwork is peculiarly suitable to the garden, and as the wood can mostly be obtained for the trouble of cutting, or at the most very cheaply, it is an economical form of decorative work. The example chosen for this article combines a simple archway, with side fences, just the thing for fixing at the entrance to your garden, or dividing the flower portion from the vegetable plot.

For construction, about the easiest plan is to make the wing pieces first, as drawn in Fig. 1, and to connect them together, as in the finished drawing, to make the archway centre.

### Varying Dimensions

Some suggested dimensions are given, but it will be appreciated that these are

subject to such amendments as space in the garden may dictate. The line (G.L.) indicates the ground level. From this it will be seen that the long and short end pieces of the wings are cut 1ft. 6ins. longer for insertion in the ground.

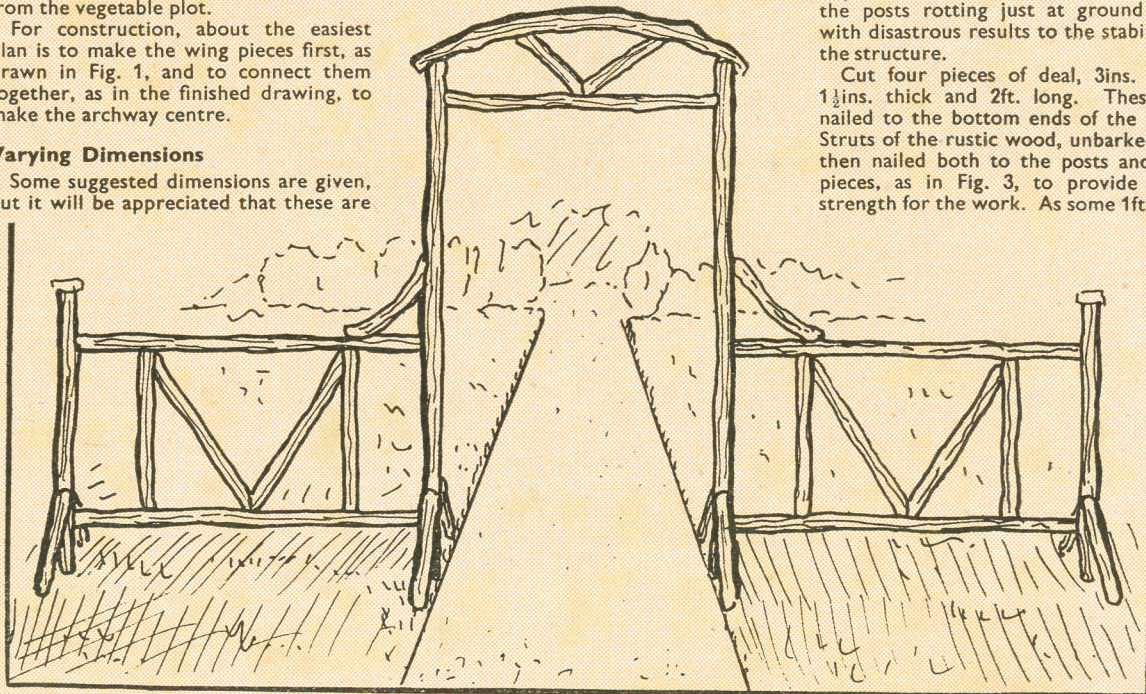
These pieces can be cut from rustic wood, 2½ins. diameter or thereabouts, no need to be too particular about this. Choose lengths as straight as possible

for these parts. The wood can be left unbarked, as preferred, many may prefer the wood in this state, as it looks more natural.

### Ground Work

Those portions to be sunk in the ground should be stripped of bark, allowed to dry, and be well creosoted as a preservative against rot. This is most important, and if neglected will result in the posts rotting just at ground level with disastrous results to the stability of the structure.

Cut four pieces of deal, 3ins. wide, 1½ins. thick and 2ft. long. These are nailed to the bottom ends of the posts. Struts of the rustic wood, unbarked, are then nailed both to the posts and deal pieces, as in Fig. 3, to provide some strength for the work. As some 1ft. 6ins.



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of these portions are to be embedded in the ground, well creosote to that distance up.

Cut the horizontal rails from 1½ ins. to 2 ins. wood. The ends of these should be roughly chiselled to a curve to fit the posts, then the rails are firmly attached to them with a coach screw in each joint, as in detail (A) in Fig. 4.

Coach screws 4 ins. long should be used and holes large enough to allow them entry should be bored in the posts,

rails and nailed in place. The verticals can be nailed straight through the rails, using long rails of the cut iron kind, as at (C).

It will be safer here to bore preliminary holes in the wood, a trifle less than the thickness of the nails, especially through the rails, to avoid danger of splitting the wood. The diagonals can be nailed or screwed as preferred, in the manner indicated at (B).

Note how the ends are bevelled off to facilitate the entry of these nails. A little forethought here will render the job much easier. Finish

the posts in their respective holes and shift, as may be necessary, to get the long posts exactly opposite each other.

The posts can now be connected together by a cross rail, some 4 ins. from the top. A coach screw joint will be best here. For the topmost rail, choose a piece of rustic wood with a natural curve, long enough to straddle the posts and extend 1 in. or 2 ins. either side. At the ends, where they will rest on the posts, saw out rightangled notches, for them to 'sit' flat on the squared ends of the posts, then nail them on.

The work can be completed with the addition of the two slanting pieces at top and the shorter curved pieces in the

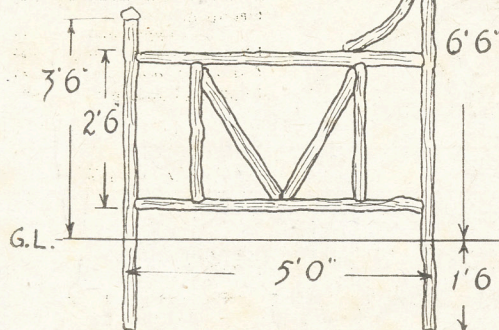


Fig. 1—View of side railing with ground level

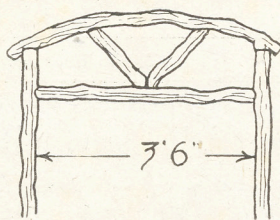


Fig. 2—The top of the archway

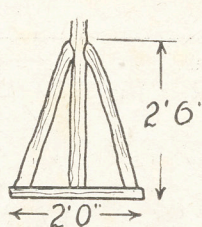


Fig. 3—Post supports

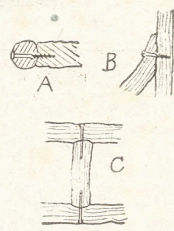


Fig. 4—Section showing joints

with smaller holes in the ends of the rails for the threaded parts to cut their way in. These screws are provided with square ends, and are forced in with a spanner or large pair of pliers.

The vertical and diagonal rods between the rails are cut from slightly thinner stuff than the rails, trimmed at their ends to fit somewhat the curves of the

the top ends of the shorter posts by nailing a square capping of deal over.

The position of the wings can now be determined. Generally they will be placed either side of an existing pathway. Dig holes 1 ft. 6 ins. deep for each post, and 2 ft. 6 ins. long. Now drop a few small stones in each hole and ram well down to firm the foundation. Drop

angles between the wings and posts. Naturally curved pieces of the rustic wood should be chosen for these and they can be screwed or nailed in position, as in detail (B).

Fill in the holes with earth, mixed with a few small stones. Well ram the stuff down, then the whole structure should be firm and stable.

## More Simple Home Cements

### Casein Glue

CASEIN can be converted immediately into an excellent glue by stirring it up with 25 per cent distilled water and 1½ per cent sodium bicarbonate, adding another 25 per cent distilled water, standing for 6 hours and adding an antiseptic to prevent it going mouldy. This glue should be applied cold.

### Waterproof Cements

CANADA balsam is an excellent waterproof cement much used in microscopy as it is transparent and adheres to glass. It may be thinned by the addition of a little xylol or benzol (not benzene).

Another similarly constituted cement which is not quite so flexible when set may be made up by dissolving ½ oz. each of gum sandarac and gum mastic in ½ pint of methylated spirit afterwards adding ½ pint of turpentine and 1 pint of strong, hot scotch glue or isinglass.

### Cement for Fastening Card to Ironwork

FOR this special purpose there is nothing to rival an adhesive made by stirring a 30 per cent solution of gum tragacanth in water till it emulsifies and

then adding four times as much strong solution of gum arabic in water. This mixture is then filtered through muslin and as much glycerine as gum tragacanth added, together with a little oil of thyme or cloves, as a preservative. This mixture, diluted, makes a very adhesive cement which should be kept in airtight bottles.

### India-rubber Substitute and Cement

THE addition of equal quantities of sodium tungstate and spirits of salts (hydrochloric acid) to a strong glue solution, will, when heated to 60 degrees Centigrade, produce an excellent substitute for rubber. It may also be used for uniting substitute rubber.

### Cement Made Insoluble by Light

SOAK 6 parts of scotch glue in water. Sand, when soft, pour off the excess and add to the swelled glue (melted by heat in a glue-pot) 1 part of bichromate of potash which has been dissolved in the smallest amount of water possible. The cement so formed must be stored in a blue bottle or kept in the dark until used as parts cemented with it become

hardened and the glue completely insoluble in water.

### Asphalte Cement (Solid)

A VERY useful workshop cement with many uses may be made by dissolving 1 part of raw rubber in 12 parts of benzene, naphtha or carbon disulphide with the aid of very gentle heat over a water-bath. When the rubber is completely dissolved, 2 parts of asphalt is melted in an iron pot and the rubber solution very slowly stirred in until the mass is homogeneous and the rubber solvent has evaporated. The syrupy mass is then cast into greased tin moulds.

This cement needs considerable heat to render it usable (about 300 degrees Fahrenheit) and the edges being joined should also be made quite hot for a good joint.

### Linoleum Paste

MIX rye flour with a little cold water. Afterwards adding boiling water, stirring the while; finally adding some glue-size while both the paste and glue are hot. A little alum should be added to prevent the paste going mouldy. If too thin, some of the water should be evaporated by boiling.

# A novel little mechanical model to make is this FAIRGROUND WHEEL

**H**ERE is a simply-made wood and card model of the Ferris Wheel you see in amusement parks at the seaside. A series of seats are suspended at intervals round the circumference of this 'ride' in which the passengers sit and which, by virtue of their weight and method of attachment, always remain vertical no matter what their position on the circular path described by the rotating wheel.

In the model given here the seats are match-box trays cut in half and all dimensions are worked out to this. First let us make the seats. Four match-box trays are required of the card type which are carefully cut in two with a sharp blade at their mid-points. This

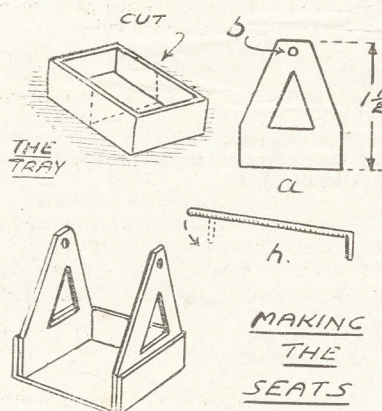


Fig. 1—Details of seat construction

gives eight half-trays as shown. Fairly new boxes should be chosen, as the card in this kind of match container becomes rather limp with use.

Now cut sixteen shapes (a) Fig. 1 as shown, from a fairly thin card and make a small hole (b) in the top of each by touching with the end of a red-hot knitting needle. This produces a cleaner hole than any other method. Glue two shapes to each tray which will give the completed seat as indicated.

## The Wheel

The wheel is built up of the two discs (c) of 7ins. diameter and the central spaces (d), which can be a cotton reel of suitable size. Plywood  $\frac{1}{8}$ in. thick is quite suitable for the discs, which are first marked but as (1) Fig. 2, with two diameters at right-angles and then two more again at right-angles.

The extremities of these give the positions at which the seats will hang and after the diameters are drawn a point  $\frac{1}{8}$ in. in from the circumference should be marked in each. A small hole is drilled here which will take the lengths of wire (h), Fig. 1, from which the cars really hang.

Continue scribing, and now draw in

the four spokes as shown and then with a fretsaw take out the space between them so a wheel or disc as indicated in the second sketch is obtained. Two of these discs are required and special care must be taken in getting the holes for the wire in the same position on both. In fact, it is best to drill the holes on one disc and then placing it over the other, mark through and drill the second disc at the point so obtained. If the holes are not really opposite each other the seats will not hang level, nor swing properly.

The middle space (d) must be 2ins. wide and the discs are attached at either side by two small screws and glue, making sure of the alignment of the holes. Once together, openings the size of the central hole of the reel are taken out of the middle of each disc, a countersinking bit being useful for this if you have one. Otherwise the holes can be reamed out in several ways.

Once made, a length of dowel (g) which just fits the central channel of the reel is forced through—the tighter the fit the better—and glued.

## Side Supports

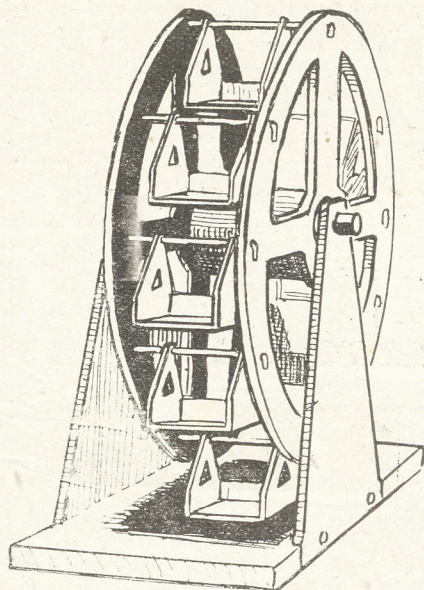
Now comes the side support. The base is a simple rectangle of wood 7 $\frac{1}{2}$ ins. by 3 $\frac{1}{4}$ ins. and the two uprights are 6ins. high and shaped as shown. Holes the same size as the dowel are taken out at the top. To fit, the one upright is just put in position, using two screws along its lower edge.

The wheel is then put in position and the second upright secured. To make running easy and to act as spacers, metal cycle or other washers are put on the axle either side of the discs. These washers should keep the wheel about a  $\frac{1}{4}$ in. away from the uprights.

Test for smooth turning and then put on the seats. Sixteen short pieces of soft wire 2 $\frac{1}{2}$ ins.

long are needed for these. Turn down the end of each to right angles with a pair of flat-nosed pliers and feed each through the corresponding holes in the discs and the top holes of the seat arms. Carefully now bend down the other end of the wire which will not be hard if a soft wire is used. Stiff wire must be avoided.

Trim off the dowel, but leave a little protruding at one side to rotate the wheel with, and



the Ferris Wheel, constructionally at least, is complete. Colouring can be ordinary paints of any bright hues. Say pillar-box red for the wheel itself, yellow for the seats and green for the base and uprights.

## On Test

If all has gone well the wheel should now turn easily and the seats remain always hanging vertically. The general appearance can be improved if it is possible to get hold of some tiny figures, as, say, from toy motor cars. There need not be a figure in each car, but they must balance. That is, if there is a figure in a seat at one side, then there must be one in the corresponding seat at the opposite side.

(Continued foot of page 381)

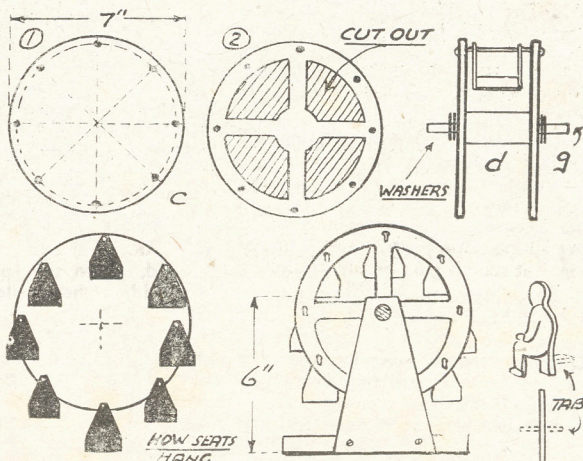


Fig. 2—Parts required for the wheel, showing how to fix

# Add to the realism of your miniature railway with MODEL EMBANKMENTS

**E**MBANKMENTS are both interesting and useful to have on your model railway, no matter whether the line is an indoor or garden layout. On inside lines they can be made to give variety to the scene and break down any suggestion of monotony that may arise from sets of tracks all on the same level. In garden layouts embankments are often necessary to make up for inequalities in the ground. But it is with the indoor variety that we are dealing here.

Briefly, real railway embankments fall into three classes (Fig. 1)—(1) the wholly wall-retained, (2) the partially wall-retained and (3) the ordinary earth

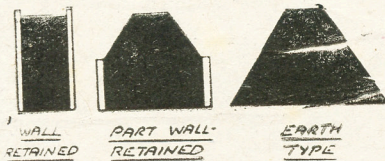


Fig. 1—The three types detailed

type. They are mentioned in this order as this is how they are of most use to the model-railwayist with an indoor line.

In actual practice the situation is reversed, as there are far more ordinary earth embankments about than anything else. Town and suburb-dwellers will see a lot of the wall-retained, however, as in their area land is precious and obviously this kind does not take so much.

In the same way the completely wall-retained embankment is useful for the indoor layout as it takes the minimum of space and can be fitted into places where the semi-walled or 'earth' type would be out of the question.

## Walled Embankment

Fig. 2 shows how to construct one of the completely walled. The sides (a) can be strips of thin plywood or even thick card will do if the embankment is not too long. The base is made of blocks of wood at intervals as (b), screws going through the lower edge of the sides into their edges.

Without further aid a single-line embankment of this type would not be firm and so cross-pieces must be put in at intervals as (c). If half-jointed into the blocks (b) there must not be very many of these, one here and there being enough to give all the stability necessary.

To give a neat and realistic finish the sides are continued a little above the level of the top board (where the rails are laid) this being to form a lip to hold ballast in position. To look well the top of any embankment should have ballast, and this can be cork chippings well glued, or pieces of other material.

The sides are finished with stone paper which is sold in large sheets by most model dealers. It is quite inexpensive

and glued into position produces a most excellent effect of heavy stonework.

For the type of embankment with a wall at the bottom, cut a number of 'cross-sections' as (D), Fig. 3, out of  $\frac{1}{2}$  in. or even  $\frac{3}{4}$  in. wood. These are set at well-spaced intervals along the course of the length in question and then connected by the top board (E) which takes the rails. Fasten together with long small-diameter screws at the point of contact and then put on the wall (F) a suitably-sized strip of plywood or stiff card. When together, these sections form a very rigid frame.

## Paper Covering

The space (K) above the wall is now filled with strong rough-surfaced brown paper. A strip of card (H) is first put in position along the edge of (E) with springs and glue and the top edge of the paper turned in being glued to this. As with the first embankment, the card strip is to form a lip to 'retain' the ballast which should come level with the top of the strip.

If scale track is being laid straight on to (E) without sleepers, the card strip can be dispensed with and the brown paper pulled right over the top in one continuous piece to the other side before the rails are pinned down. Glue-painting and then sprinkling with crushed stone is all that is required in this case to give a quite presentable finish.

With tinplate rail or scale track on sleepers, some sort of ballast must be used to get a good effect. The half-wall can be covered in this case with stone or brick paper, as often

these smaller walls are completed with the standard brick.

## The 'Earth' Type

Fig. 4 shows how the full 'earth' embankment is made. It is much the same as the previous kind but the cross-sections are the full triangle in shape. There is no need for any under base, for with  $\frac{1}{2}$  in. or so material and again using long but small-diameter screws, the sections will stand perfectly firmly.

The brown paper here is taken down from the strips of card bordering the top board to the under side of the sections, being held by a drawing-pin and glue at each end. Should the bottom edge of the paper not lie too well, thin strips of wood can be put between the lower points of the sections which give something to wrap the paper round.

## Beware of Derailment

In all cases, track on an embankment should be particularly well laid, as a derailment here may cause a whole train to fall some little distance, which can easily damage a heavy model, or at least do no good to the paint-work. Also, do not make the grade up to an embankment too sharp, although a good clock-work engine will tackle quite a slope with a reasonably heavy load. With electric power grades can be steeper.

An indoor embankment should not be laid too near the front of a set of tracks as it can completely hide those behind and so waste their effect. Right back against the wall is a good location.

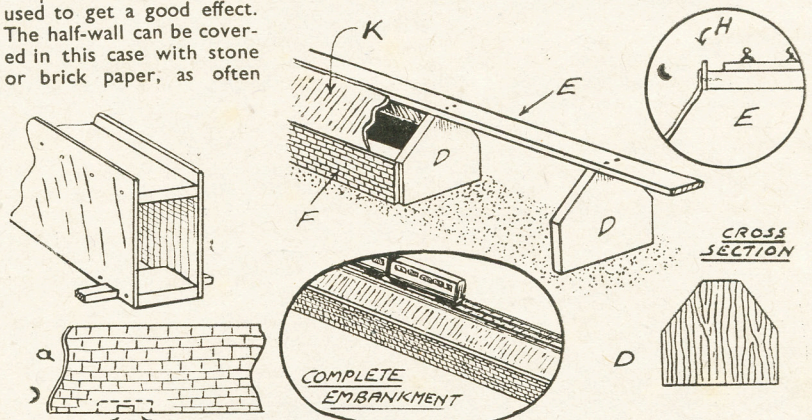


Fig. 3—The parts of a built-up embankment

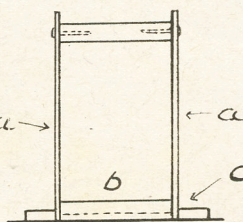


Fig. 2—Walled type

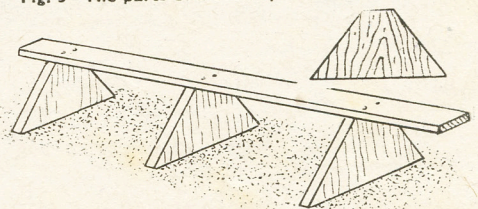


Fig. 4—Making an 'earth' embankment

# Two alternative figure designs for decorating A NOVEL STRING BOX

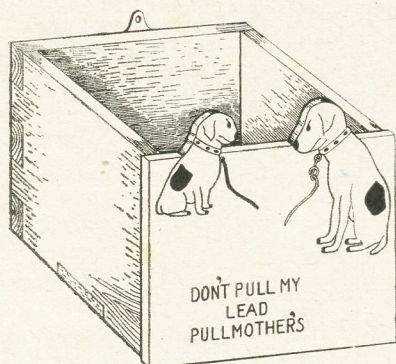


Fig. 1—Box ready to hang

**T**HE novel string box indicated in Fig. 1, of the accompanying illustrations is well worth making, and is bound to be popular in the home. The layout for the box front is indicated in Fig. 2, which is made in wood  $\frac{1}{4}$  in. thick. First cut the wood 6 ins. square, and divide the surface into  $\frac{1}{2}$  in. squares. Draw the dog and puppy as indicated, which is quite easily done by following through the squares.

## The Extending Heads

The heads of the dog and puppy are cut out to shape, and the top edge of the front squared off along the thick line. A small hole is drilled at points (A) and (B) which allows for string to pass through. A piece of coloured string may be fixed in the hole for the puppy, and knotted in order to make it a fixture, as shown, to indicate the lead for the puppy. The lead for the dog is the end of the ball of string which is in use, and a loose knot is formed after use in order to

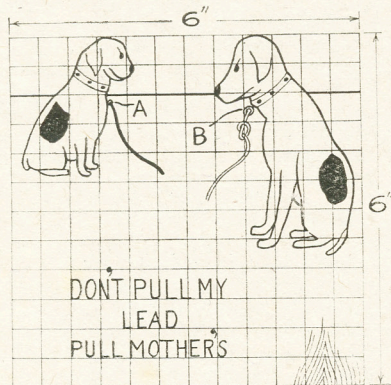


Fig. 2—Outline of dog and puppy

prevent the end slipping through into the box.

An alternative front for the string box is indicated in Fig. 3, and is in the form of a cat and kitten. Have the wood for this the same size as for the dog and puppy. The outline is drawn in the same manner as already described. The top portion of the heads are cut out, and the edge squared along the thick line as shown. A small hole is drilled at the bottom of the cat and kitten to allow the end of the ball of string to form the tail for the cat, and a coloured blank piece to form the tail of the kitten. More will be said about the finish of the front. In the meantime the other parts of the box are made.

## Box Back and Sides

For the back indicated in Fig. 4, obtain a piece of wood  $\frac{1}{4}$  in. thick and cut to size  $5\frac{3}{4}$  ins. by 5 ins. Carefully cut the tenons 1 in. long by  $\frac{1}{8}$  in. deep. In the centre of the bottom edge cut the mortise 2 ins. wide and  $\frac{1}{8}$  in. deep.

Two sides are required and these are indicated in Fig. 5. Have the wood  $\frac{1}{4}$  in. thick and cut to size  $5\frac{3}{4}$  ins. by 5 ins. Cut the tenons 1 in. long by  $\frac{1}{8}$  in. deep on the end of the side pieces which will be the back edge. In the position  $1\frac{1}{4}$  ins. from the front edge, cut the mortise on each piece 2 ins. long and  $\frac{1}{8}$  in. deep as clearly indicated. Care should be taken with the cutting of these joints in order to get a good square fitting box.

The bottom of the box is shown in Fig. 6, cut in wood  $\frac{1}{4}$  in. thick. First make the wood to size  $5\frac{3}{4}$  ins. square and in the centre of the edge which will be the back edge of the box, cut the tenon 2 ins. long projecting  $\frac{1}{8}$  in. On the two side edges

of the bottom  $1\frac{1}{4}$  ins. from the front edge cut the tenons 2 ins. long and  $\frac{1}{8}$  in. deep.

Having cut the two sides, back, and bottom, fix them together with glue and a few small pins. The front piece is carefully glued on and made secure with a few pins.

## Colouring

It now remains to colour the box, when it can be fixed in a chosen position by means of a small back plate in the usual manner. An idea for colouring the dog and puppy front is to have the background cream enamel, with the dog and puppy white and black enamel. For the box made with the cat and kitten front, a nice effect is obtained by solid black enamel cat and kitten with whiskers, on a white enamel background. The remainder of the box may be given a coat of stain.

It now remains to do the printing of the words, and these may be done with suitable letter transfers, or printed with black enamel in the position indicated on the front.

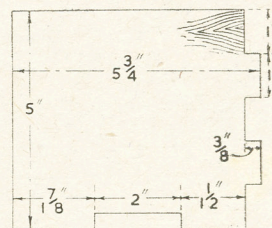


Fig. 4—Back of the box

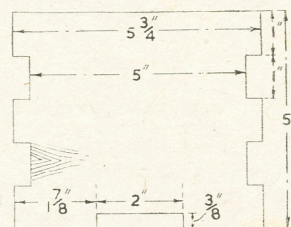


Fig. 5—Two sides like this

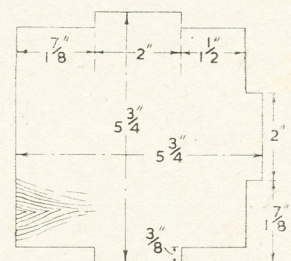


Fig. 6—The box floor

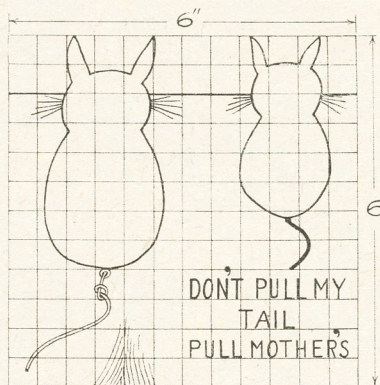


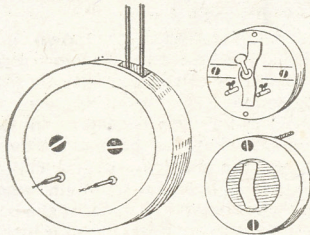
Fig. 3—A simpler back view of cat and kitten

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# The professional touch is quite easy with care when FITTING NEW LIGHTS

**T**HE circuit for a new lighting point is shown by dotted lines on the diagram. It should be carried out in 1/064 cable, either rubber or lead covered. This is single wire .064ins. thick with a capacity of 10 amps. A normal house lighting circuit has 5 amp. fuses and with all lights burning, the current consumed is less than 5 amps. This 1/064 cable, therefore, will stand up to twice the load it is expected to carry and is quite safe.

The circuit is from the live side of an existing switch to one terminal of the new switch, from the second terminal of



The switch assembly

the new switch to one terminal of the new ceiling rose and from the other terminal of the ceiling rose to the live side of an existing ceiling rose.

For each new point to be fitted, a switch, a lampholder, a ceiling rose and two hollow wooden blocks on which to mount both switch and lampholder will be needed, with sufficient cable and a short length of twin flex.

## Marking Out

First determine where the new ceiling rose is to be fitted and make a hole in the ceiling big enough to take a double thickness of cable. Then mark the place where the new switch is to be and make another hole in the ceiling again to take two cables.

Above these holes in the ceiling it will be necessary to lift floor boards in the room, and also the board above the nearest ceiling rose already fitted. Some of these boards will be loose since they were lifted for the original installation of either gas or electricity. In a false roof for a bedroom light these difficulties do not exist.

## The Cable

From the nearest existing switch, the new wire is led with the others through the ceiling, along under the bedroom floorboards to where the hole leading to the new switch was made. There it is doubled and the loop pushed through. It is fed through until there is sufficient to reach the new switch plus a few extra inches for connections. Then the cable is led to the hole for the new ceiling rose. Again it is looped through and enough left for connections, when

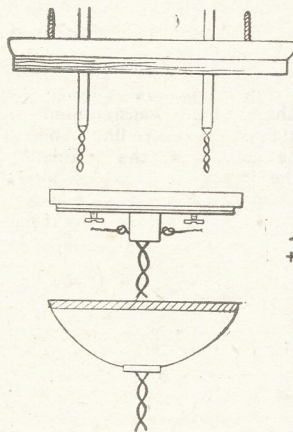
the cable is taken to the old ceiling rose.

## Fitting The Switch

First one of the blocks is drilled to take two wires. These holes should be 1½ins. apart, slightly above centre. Holding the switch in place will show the position. Next drill two holes for fixing screws so they will be hidden by the switch. Wall plugs are fitted to take these fixing screws so the block will be quite firm.

The wire loop is cut and the ends bared to fit into the switch terminals, a slot cut in the side of the block to take the cables and then the block is threaded on to the wire and screwed into place.

The switch is next threaded on the wire so the bared ends go through the two holes in the back and into the



The ceiling rose assembly

terminals. They should be pushed home until stopped by the insulation, the terminal screws tightened and any spare wire cut off.

The switch is then screwed to the block and after a check that connections are tight, the switch cover can be screwed into place. Any spare cable outside the switch is fed back through the ceiling.

## The Ceiling Rose

Before the ceiling rose is ready for connection the lampholder can be connected to it with the flex. Under the cover of the ceiling rose there will be a short tube moulded to the centre of the fitting. It will have two holes, one in each side. Through these the flex is fed and knots tied so it will not pull back.

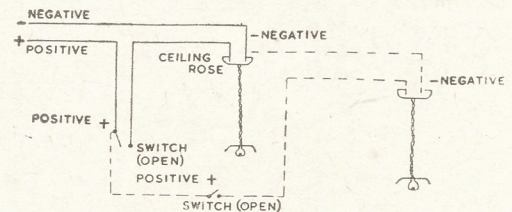
Enough is left beyond the knots to make connections, the ends are bared and then screwed under the flat terminal screws. Thread the ceiling rose cover and lampholder cover on the other end of the cable and then connect the lampholder, making sure the flex is wrapped firmly around the two arms moulded to hold it against strain.

If you are lucky there will be a beam near enough the hole in the ceiling to take the screws for the ceiling rose block. If not, a piece of timber will have to be wedged between two beams. Drill the block to take the wires, slightly different to the switchblock, cut the wire loop, bare the wires and feed them through the block. Then screw the block into place and connect the ceiling rose assembly. Check that screws are tight and connections firm and then screw the rose into place and replace the cover.

## Connections

Before attempting any connections—switch off. Then remove the old switch and its block. The chances are there will be two or more wires twisted together in one of the leads. If so, connect the new wire and replace switch. If the live lead is not indicated in this way it must be found, either with pole finding paper or by the simple process of trial and error. In this case make only temporary connections.

Unscrew the old ceiling rose and block and remove them from the wires. Again, it is likely there will be two



The new circuit is shown by broken lines

wires twisted together where another point has been looped in. The new lead is connected to this and the ceiling rose replaced.

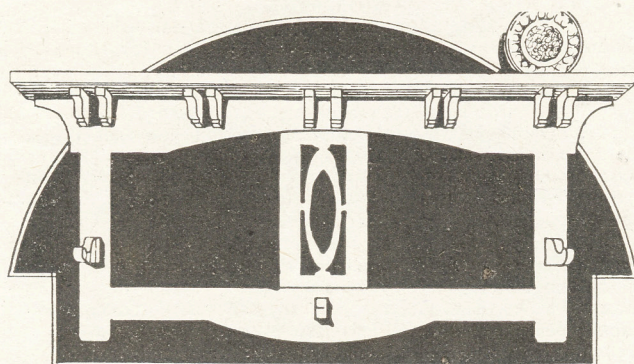
If the live lead is not indicated, make a temporary connection and try the new light. If it does not work on its own switch, quite independent of anything else, then one or both the new connections are fitted to the dead side and must be changed over.

## Neat Finishing

All that remains when the connections are finally made is the tidying up. The visible wires will be those from the new switch to the ceiling. These can be held in special slips which can be bought, covered with a wooden beading, or it can be plastered into a groove cut into the wall surface. In this case it is as well to use beading as a temporary measure until redecorating time comes round.

These jobs are well within the ability of the handyman electrician. He should take pride in his work and see that everything is done in a clean and workmanlike manner.

# An ideal piece of furniture for the small hall is this HAT AND COAT RACK



ILLUSTRATED here is a useful hat and coat rack suitable for a small hall or entrance lobby. The rack is of very simple construction in which the fretsaw may be used to execute a great part of the work. The main frame is made of two side rails, a top rail, a lower rail and a central panel.

The front view of the frame, Fig. 1, gives the positions of the rails and how they are to be fixed together. The side rails (A) are 11ins. long by 1½ins. wide by ½in. thick. Top rail (B) is 21ins. long by 2½ins. wide at the ends, and 1½ins. deep in the middle, by ½in. thick. The bottom rail is 21ins. long by 1½ins. wide at the ends and 2½ins. wide in the middle, by ½in. thick. The middle panel is 8ins. long by 4ins. wide by ¾in. thick.

The top and bottom rails are halved and dovetailed into the side rails, and these joints glued and screwed. The manner of setting out the dovetails is shown in the detail Fig. 2 and the sketch alongside it. The tenons on the rails (B) and (C) can be cut with the fretsaw, while the recesses to take them are cut down with a ¼in. chisel.

## Shaped Bottom

To get the curve of the underside of rail (B), first set across the centre line and extend this downwards on the bench or table for a couple of feet, as shown. At this point put in a fine brad and then with looped string and a pencil describe the arc. Note here that the curve on the lower edge of the rail (C) will be done in a similar way to the rail above, only the string and loop will be set at 15ins. instead of 24ins.

The work of cutting the curves in both instances will be done with the fretsaw. The middle panel (D) will be recessed at the top and bottom into the two long rails, similar sinkings being made in the two front edges of the panel. Note here that at the top of the panel the line will be curved.

The best and accurate way of getting this curve is to lay the panel beneath the top rail in the position it will assume when fixed, and then mark it in pencil or with a scribe. The cutting down can

then be accurately cut in. Test all the dovetailed joints before actually gluing and screwing them together, and see the frame lies flat and level on the bench or table at completion.

There is a nice little bit of fretwork to do in the centre panel, and the enlargement of the outline for this can be taken in hand by following the copy in Fig. 3. As before stated, the panel of ¾in. wood is 8ins. by 4ins. In the diagram the left-hand side of the fretted part is divided into 1in. squares.

Simply draw similar squares on half the panel of wood and line in the curves. Trace these off and transfer them to the other side of the centre line. Then carry out the cutting in the ordinary way with the fretsaw. Clean off all edges with glasspaper and then glue and screw the panel in place between the rails.

To form a finish between the ends of the back frame and the bottom of the shelf, small shaped brackets cut to the outline shown in Fig. 4 are glued and

nailed in place. Sink the heads of the nails and fill with a filler.

There are ten small brackets of ½in. thick wood to be fixed beneath the shelf, and the outline of one of them is shown in Fig. 5. Mark and cut one bracket and clean it up, making the cut edges smooth. Use this cut-out as the template for marking round to producing the other nine brackets. Space out each pair of brackets as seen in the sketch of the finished frame, and glue them securely, putting in a screw, perhaps, at the back of each as extra fixing.

## Wooden Pegs

Three hat pegs are shown in the illustrations but this number could be increased if desired. It should be mentioned here that the rack is not intended for heavy coats. In fact it would be best to hang up only light articles like raincoats or mackintoshes. The pegs may be cut from ½in. wood to the shape shown in Fig. 6. At the back of these pegs a ½in. deep tenon is included, this being very necessary to help take the weight which the peg must bear.

For fixing the rack to the wall it will be best to screw on two metal hanging plates to the back frame on the upright rails (A). These will take the weight much better than if the plates were attached to the back edge of the top shelf. The fixing nails or screws for the rack should be plugged into the wall for fixing.

Almost any kind of wood could be employed. The best effect would, of course, result from oak or one of the many good class cabinet woods. Even pine or deal might be used with a finish of stain and varnish.

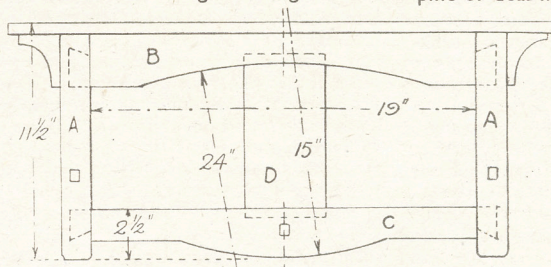


Fig. 1—General outline of main parts with dimensions

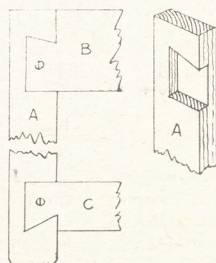


Fig. 2—Detail of rail joints

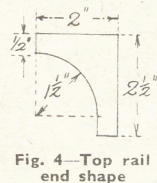


Fig. 4—Top rail end shape

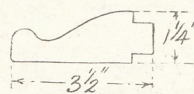


Fig. 6—Peg shape

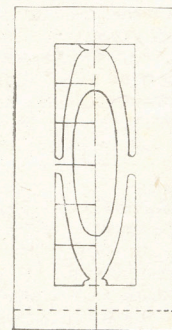


Fig. 3—Outline of centre panel

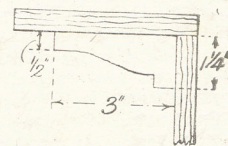


Fig. 5—Angle brackets

# Some useful suggestions for those who are spending EASTERTIDE AWHEEL

**C**YCLING is a happy way of spending the Easter holiday. Falling in early April, this year we anticipate a spell of favourable weather. Of course, it is too much to expect perfect holiday conditions, for spring weather is apt to be fickle, therefore it is advisable to go prepared for those showers that bring forth May flowers. Take your cape.

Anyway, Eastertide affords us the first long holiday period of the year. The call of the open road is irresistible, and cyclists avail themselves of this golden opportunity to explore the greening countryside, and revel in the joys awaiting.

April brings bright and beautiful things. It is the month that bequeaths to us the golden daffodil, the primrose, the celandine, butterflies again, and bird-song, bluebells and lady's smocks. April often brings balmy days and blue and sapphire skies.

Each passing day increases the countryside's charm; the face of Nature beams with springtime smiles and 'vernal graces'. Joy of living fills the earth. The cyclist appreciates all these delights—the emerald green of the fields, the budding hedgerows bright with tear-drops from her fretted skies, the cow-slips in the grass—all the fleeting charms of the awakened year.

## The Strenuous Tour

To some riders the strenuous tour will appeal. They may desire to 'do' some picturesque district, explore as much of a particular county as possible in the time at their disposal. To make a round of ancient castles with historic associations, explore a river valley, or undertake a pilgrimage to some locality famous by its associations with well-known people. There is Shakespeare's country, the Lorna Doone countryside, the Wessex of Thomas Hardy, or that district linked with the Brontës, to mention a few. There is not a county in Britain but has some appeal to the cyclist.

Surrey and Sussex are recommended to riders living in the London area, and Kent has many features of interest. Suffolk—in particular Constable's country—is full of charm with its old-world villages of the Brecklands, and Norfolk is a fascinating region with its Broads and rivers. Derbyshire and its dales, Wild Wales—indeed, the list of attractive tours is almost endless, and we could go on indefinitely.

Outstanding at this season we do not overlook Devon, Cornwall, and Somerset (for spring comes early to the delectable West Country), or the claims of Dorset, a county immortalized by Thomas Hardy.

Other cyclists at Easter may prefer a 'potted tour'. There are many popular regions listed under this heading,

covering mileages of from 100 miles or so to 300 miles. Those riders who like 'pottering'—taking things easy, and preferring to loiter here and there in order to taste of the pleasures of exploring charming places instead of passing through with no more than a casual glance. These cyclists may plan nice little tours easily covered during the four days' Easter break.

## Pencil, Notebook, Guide and Map

With a pencil, a notebook, a guide to the district chosen, and an O.S. map of same, one can outline a pleasant enough route that can be taken comfortably to suit one's capabilities and physical powers. Older riders especially will benefit by 'pottering'. As we creep on towards middle age we should begin to realise our limitations.

One hundred in a day may have been done without undue risk in our younger days, but we find that 50 to 60 is enough, in the years when grey hairs increase, or maybe, we lose most of our 'thatch'. It is no good taxing one's energy to a dangerous degree.

Eastertide, if fine and springlike, is not too early for the hardy youngsters to sleep out in a tent. This cycle-camping is more strenuous, but, for those energetic and strong, and well on the right side of the meridian of life, a holiday of this description is crammed with fun and adventure. If two youngsters join forces, the work of transport can be halved.

Of course, such a tour entails more planning. You have to find suitable camp sites, get to them, and pitch the tent and prepare meals. Carry as little luggage as possible, cut out everything save necessities.

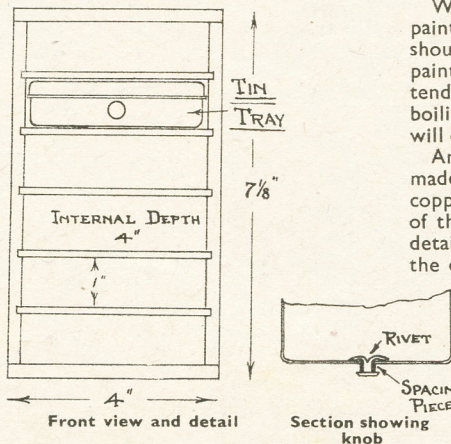
Camping has this advantage, you are independent of lodgings—the 'bed-and-breakfast' accommodation. At Eastertide, when everywhere is crowded with holidaymakers, this is a worth-while consideration.

There are the hostels, of course, but even those appreciated spots are often over-crowded during a popular holiday season. Whatever sort of outing you plan, it is important to remember your nightly 'doss', and arrange accordingly.

## A Useful Nest of Drawers from Empty Metal Boxes

**W**E all use or can obtain discarded tobacco and other tins for storing screws, tacks, small tools and the other oddments in the workshop. The rack described enables the tins to be kept in an orderly and accessible way, and makes a neat nest of drawers.

It is made of wood and the drawing gives details of a rack to take six oblong 2oz. tobacco tins. It can, of course, be constructed to individual requirements for other size tins.



From a piece of  $\frac{1}{2}$  in. thick wood, cut the top and bottom of the rack, each 4 ins. wide and  $4\frac{1}{2}$  ins. deep. Plywood is quite suitable for this. The two sides are 6  $\frac{3}{4}$  ins. high,  $4\frac{1}{2}$  ins. wide and  $\frac{1}{2}$  in. thick, while the back is  $7\frac{1}{2}$  ins. high by 4 ins. wide by  $\frac{1}{2}$  in. thick. Each of the five shelves is  $3\frac{1}{2}$  ins. wide by  $4\frac{1}{2}$  ins. deep by  $\frac{1}{2}$  in. thick.

Form five grooves  $\frac{1}{4}$  in. deep in each side, leaving 1 in. between each. The top and bottom are butt-jointed to the sides, glued and nailed together. Glue and nail on the back with  $\frac{1}{2}$  in. tacks.

When set, glasspaper the surface and paint in aluminium colour. The tins should also be painted with aluminium paint, as this will help to prevent any tendency to rust. Or they can be put in boiling water with soda, when the paint will disappear, leaving a bright surface.

An effective knob for each tin can be made by using a bifurcated rivet, with a copper spacing piece between the head of the rivet and the tin, as seen in the detail. Drill a  $\frac{3}{16}$  in. hole in the centre of the end of the tin. Cut a spacing piece  $\frac{1}{8}$  in. long off a length of  $\frac{3}{16}$  in. diameter copper tube, and press this over a  $\frac{1}{8}$  in. rivet, right up to the head. Push the rivet into the hole in the tin, and knock over the ends. Alternatively, bakelite knobs can be purchased and fitted.

# You can make and arrange interesting exhibits by planning MODELS IN GROUPS

**M**OST readers of *Hobbies Weekly* probably have a copy of *Hobbies Handbook*, and from it gather numerous ideas of articles and models to make. Its pages should certainly produce an ample number of things to do. The suggestions which follow will probably be something which may not have occurred to them, but which have proved successful in a number of instances.

Few realise, for instance, what interesting groups of historic or modern ships or machines can be made from the various models shown. These groups can be particularly interesting to schools or clubs, and we know that already a range of subjects has been worked out co-operatively by the students and members.

## Types of Models

Let us then, look at the possibilities of which of the models and designs shown in the *Handbook* can be put together with this idea in view. You may say right away, that the models are not related to each other in size, and that whilst some are quite small, others would be entirely out of proportion, if put together.

This is quite true, and is necessary in view of the area of the design sheet with which we have to deal. If these models do not relate to each other, there is no reason why you should not make them do so by finding a common proportion for all. In this, you need not be absolutely accurate to scale with each other. It would not matter a great deal whether, for instance, a double-deck bus was  $\frac{1}{2}$  in. longer than it should be. It might not look out of proportion to a small car if it were extended to that dimension.

## To One Scale

The great thing is to get a general scale for all of them so you can increase the various patterns to bring them in line. By taking any one of the models, you should compare it in size with the others of the range you are going to make. If it is, say, half way between the largest and the smallest, then it will serve as a satisfactory unit to work from.

That is, that the larger sized model can be reduced to the standard size and the smallest size model can be increased up to it. If it is done in proportion rather than in definite inches, the matter becomes easier. If you have, for instance, a bus model shown as 7ins. and you want to make it 14ins., then it is obvious that the parts have to be doubled in area in order to make them in proportion. Or, of course, the reverse is the case in that if you want to reduce, then you can do this by a half, or a third, or two-fifths, or something which will fit into the actual scale of the

whole range.

This is the first work which will have to be undertaken after you have obtained all the necessary designs. Having got your all-over scale, then the proportion of the patterns will have to be undertaken too, to bring it down to the sizes required. Fortunately most parts in model making are plain outline drawings, and without all those intricate frets which would be almost impossible to undertake in reduction satisfactorily.

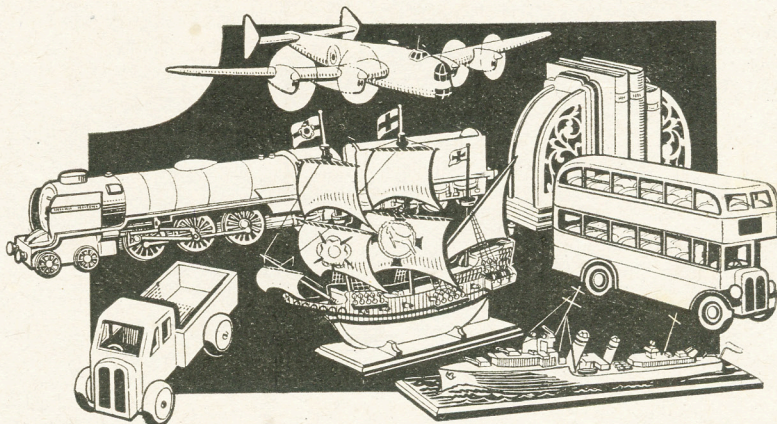
## Use a Pantograph

The measuring can be done with compasses, or you may have a pantograph which will make the work much easier. This is an instrument by means of which you go over the outline of the pattern provided and re-produce it either smaller or larger as required automatically. These pantographs are

doubtedly, appeal to school groups, because they provide the opportunity of some practical visual results in history or geography or shipping, etc. Much of early history, indeed, is represented by the various old-time ships.

## History in Ships

Apart from making models, there is a great deal of interest in the knowledge of how these great ships altered during the course of years. How at one time, very high sterns were built and how guns were innumerable, set on the various decks, as well as on the main deck. How these were gradually wiped away in the course of years until you come to the plain severe outline of the more modern galleon type. Or compare the Santa Maria with its single gun, or the Mayflower with its handsome pictorial shield work on the sides and



now obtainable from *Hobbies Ltd.* in steel, or articles have appeared in *Hobbies Weekly* on how to make them.

When the designs are cleared up ready for use, you have to consider the question of material. Obviously if you are buying a kit for a small model, there will not be sufficient wood to make an article double the size. Your best plan if possible is to obtain larger panels of wood and then mark out the patterns of the various models in the thickness required.

By carefully fitting the various shapes on to a fairly large board, you can reduce the wastage considerably. The patterns can fit fairly close to each other, jigsaw-puzzle fashion, always bearing in mind to get the grain as far as possible running in the direction which will provide the greatest strength. If you are fortunate enough to have, or be able to obtain, plywood, then use that by all means, because after all, the model will finally be painted so the laminated edges of the wood will be covered.

Now for some suggestions with regard to the grouping of the models themselves. These suggestions will, un-

front, gallantly setting out for a new country with but a few guns to protect them against privateers or any marauders of the sea.

In this group you have not only the old-time galleons and ships of the Mayflower type, but you could include the Victory as a more modern battleship than the old-time galleon, and the trading clipper the Cutty Sark.

## Modern Boats

In contrast and yet comparison with these old-time ships, you could arrange a group of modern boats for which again, a variety of designs is available. One of our recent patterns is the R.M.S. Britannia, the queer-looking single-funnel ship of sails which was first fitted with paddle wheels and engine to help it get across the Atlantic quicker. With it you could put the model of the Queen Elizabeth and probably reproduce both to scale, which would show very clearly the astounding progress made in size of ships of modern time.

If you want the group up-to-date, showing maritime power, you could include cargo steamers, the pleasure

paddle steamer, a small tug, and even a battleship or other naval ships. There has been, of course, a design for making a model of the Norfolk Broads motor cruiser, but it would hardly do to include this with sea-going craft.

### Motor Vehicles

Again, you could take the motor vehicles now published or commonly seen on our roads. Here a further range of designs is available, and you could even build a wayside garage quite easily, with roads coming along to it, carrying the actual models in their approach. What an excellent group it would make to have such models arranged naturally in their places.

The petrol tanker could stand beside the pumps, the motor coach could be coming along in the distance, with its passengers, a double-decker could have just been passed, whilst other everyday motors also in the picture could be the small 30 cwt. van, the large six-wheeled lorry and if you wish to add a wider range, you could include the little racing car, the model jeep and even

fire engine. A group of these models would be excellently representative of modern motor traffic.

A careful perusal of the pages of the Handbook, too, would show that many normal village or countryside model groups could be made. There are, of course, the various designs for farm-houses and farmyard figures, and if you would extend your village generally, you could add the windmill taken from its moving platform, the railway stations and footbridges, with, possibly, parts of the travelling circus coming down the road.

### Wayside Scene

A toy roundabout would make a suitable addition to a wayside field, and there is the wagon and horses which could be coming along. A model toy of a galloping horse is also available, and if the rider and fence is taken off the platform shown on the design, they could be placed in a suitable position in the countryside scene. In addition there are numerous outlines of dogs, rabbits, cattle, etc., which could well be used. It should be a comparatively simple matter

to reduce them to a convenient and common size.

The making of all these models provides an excellent co-operative effort amongst a group or several workers together, because each could be making an individual part and yet know that the whole thing when assembled is going to form an attractive unit. Apart from the fretcutting of the models, there is the enjoyment of painting and setting up for show purposes.

### Group Work

Such co-operative effort, too, is often very much in demand for exhibition work, and there are also shopkeepers who are only too pleased to make displays of such novelties on their premises for the attraction and interest of customers.

As suggested at the beginning, the idea may be new to some of our readers, but we are sure that with a little thought along the lines just mentioned, they will find added interest in the designs and Handbook pages to lead to their further enjoyment.

## How to ensure neatness and efficiency in FLEX ENDS AND JOINTS

**W**HEN doing odd electrical repairs about the home, it is often necessary to retrim the electric wire or conductor ends before fixing to the terminals. Such jobs as refixing switches and heating plugs, call for special attention in preparing the conductor ends.

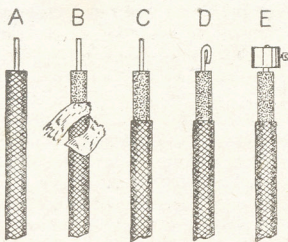


Fig. 1—Stages in preparation

In cases where the wiring is done in all-insulated rubber covered cable, take particular care with the single stranded wire often used in lighting circuits. It is so easy to nick the conductor when trimming off the rubber. It is better to shave the rubber off with a knife, rather than cut in and pull it off as is often done.

### Trimming

With stranded wire the same care should be taken in trimming off the insulation, in order not to damage the conductor. Special attention should be given when preparing the tape-and-braid type of conductor often met with,

and this is best done in the following manner.

The illustration at Fig. 1 indicates the stages of preparing a single stranded conductor end. In view (A), the insulation is shown trimmed back right up square with the rubber and outer covering of tape and braiding. This idea is not a good one, since the tape and braid tend to set up a certain amount of condensation which must be avoided.

Strip the tape and braid, as indicated in (B), and finally trim it off as (C), leaving about 1 in. of rubber with the bare conductor on the end. Before inserting a single strand conductor in the terminal of the switch or other item, double the end over as indicated in view (D).

This method will ensure a much better connection than if the strand is fixed in single. The conductor is finally shown connected to the terminal in view (E), and take care to only have the tip just protruding as clearly shown.

These flexible cords or conductors connected to various electrical apparatus should never be neglected if trouble is to be avoided. If the outer covering becomes frayed and worn, and the rubber insulating the wire conductors becomes bared, then serious trouble such as short circuits with resulting fuse blowing is bound to occur.

Provided the insulating rubber round the conductors has not become damaged, the frayed outer covering of braiding

may be covered, and thus prolonging the life of the flex. A good method of making good a worn patch in the flex is described as follows.

### Covering

In the detail at Fig. 2 view (E) indicates a piece of flex, the outer braiding of which is frayed, exposing the three strands of rubber to be found in three core flex. If the rubber covering is intact and sound, first bind a length of rubber tape round the worn part, as indicated in view (F).

Commencing about 1 in. from the frayed end, bind a layer of electrician's black adhesive tape, as indicated in view (G). Continue the tape well over

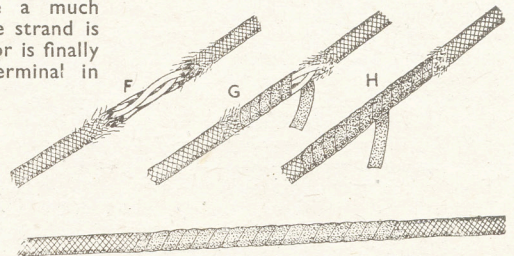


Fig. 2—How to treat and repair worn flex covering

the other part of the frayed portion, when the finished binding will appear as indicated below. Use binding tape for this purpose not too wide;  $\frac{1}{2}$  in. will be found most suitable.

Bind it evenly and smoothly in a spiral, and finish off neatly.

## Make a point of also reading all the advertisement pages

# For successful photography you should have an occasional CAMERA OVERHAUL

**I**N a short time from now everyone interested in photography, particularly those who have recently become possessed of a camera, will be making full use of the Easter holidays to get out-of-doors and into the open country by hiking, cycling or motoring. Undoubtedly, the camera will be in evidence, for it is the commencement of another photographic season for most amateurs and the time of the year when there is ample opportunity for some real good pictorial work.

Although most of this article is intended for those who only use the camera on holidays and special occasions, and for beginners, there may be one or two tips which the more experienced might find serviceable before the year is out.

## Testing the Camera

The first hint to be mentioned and to which it is hoped every reader will take the very first opportunity to give the fullest consideration, is to spend a few moments on the camera, testing each part to see that it is working efficiently, to be perfectly certain that the inside is completely free from dust and any particles of paper or splinters of wood which may have come away from the spools last season.

It is really surprising what can accumulate in the interiors of both box and folding types. It is also not only surprising but very disappointing when one sees how otherwise good negatives are made useless by some small and trifling bit of something that has found its way into the camera and persists in settling on the film at the time of exposure.

On two occasions during the holiday season last year amateurs asked the writer to explain the markings on some of their prints. In one case it was one fairly large irregular shaped black mark.

Of course, it had to be in a prominent part of the print. When the camera was brought and the back opened, out dropped a tiny splinter and, as it proved to be the same shape as the blemish mark on the print, it was obviously the cause of the trouble.

The second batch of prints had tiny spots scattered all over them. The camera was one of the box type and when its back was opened and the sides were given a rap quite a shower of dust appeared on the tabletop. The owner admitted that when he took the last spool out of the camera at the end of the last season he unfortunately left the camera on a bench in the garage. He did not realise his carelessness till about four or five weeks later when he discovered it and noted that the back was still open. In any case it pays to clean the camera every now and then. A dry cloth or clean brush should quickly remove these hidden spoilers of good films.

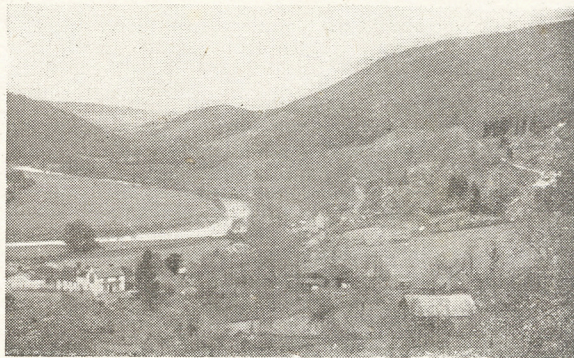
## The Shutter Action

When testing the parts do not overwork the shutter. Once or twice at its slowest and quickest speeds will indicate whether it is working satisfactorily or not. You cannot test its accuracy, but if you consider it is faulty, then take it to a reliable dealer and ask his advice. Sometimes the iris or other form of stop diaphragm may show signs of sticking. If it can be got at easily, rubbing gently with a dry cloth will put it right. Do not use any oily rag, it may have got slightly damp during the winter months.

The lens should not require much attention and it is inadvisable to remove or unscrew any parts of it. Clean the outer surfaces with a silk handkerchief if they are easily reached. The rails or slides on which a folding camera is extended may need polishing to remove any dust, dirt, rust or dampness. Here it will be alright to use an oily rag but not the oil can. The film holders and changing device should not want much attention unless they have been subjected to rough usage such as trying to force the changing of a film that was badly inserted and refused to wind.

Finally, the bellows must be tested for pin-holes. Open or remove the back, extend the

bellows to their limit, place a dark cloth over your head and the back frame of the camera, then stand under an electric light with the camera back open and held close to your eyes. By gently moving the camera in all directions with



A delightful picture of the village of Llandogo

the light shining full on the bellows you should immediately detect the slightest flaw, hole or worn-through-section of the leather.

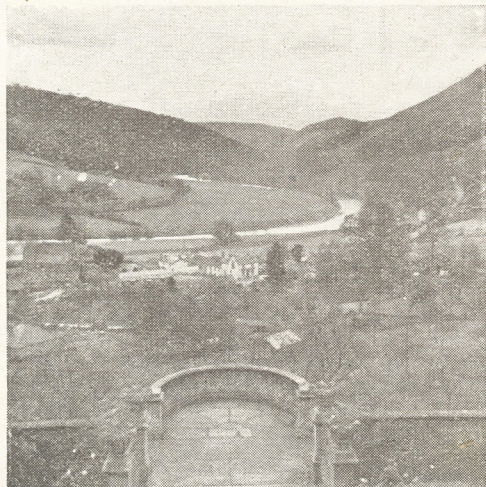
Having gone over the camera in this way without finding any trouble it will give you confidence to start the season knowing that you will not be let down by your apparatus. If anything goes wrong, then it is your working which requires overhauling.

## New Apparatus

There may be some readers who have been fortunate to have a new camera come into their possession, and, while it is agreed that all this business of overhauling is not necessary, yet it is most important that that hint concerning dust, etc., in the interior should be applied to any new piece of apparatus. It is possible for it to have left the factory without being 'dusted'. In any case a new camera should have a few minutes spent on it before it is taken out and exposures made.

Have the book of directions handy and make yourself familiar with each part by carefully reading all about it and understanding how it works and what is its real function. If you have never had a camera before, or if the one you now have is more complicated than the previous one, then you will find that the time spent in this way will prove of very great value to you. It may save you many failures.

To a very large majority of amateur photographers a new year is soon due to start. The camera has been idle, no exposures have been made and in a week or two fresh enthusiasm will be awakened in the hobby. The second important hint is that one or two 'new year resolutions' be made and kept! If it were possible for you to go into the works of a firm specialising in the



The same view as above from a different angle

developing and printing of amateurs' films—you know the sort of place where developing and printing is done—you would have not only a great surprise—it might be a great shock. If you could examine a batch of films you would realise the enormous percentage of failures and partial failures.

### No Casual Clicks

Do not get the idea that these are through any fault of the developing and printing manipulation. That is not the blame. In 99 per cent it is entirely due to the amateur who bought the film, placed it in the camera and made the shots. Yes! he or she just pushed the trigger down and chanced the rest.

The resolution we have all got to make, and stick to, is that we have completely finished with all haphazard 'snapping'. It is just too costly and extremely disappointing to find that another good picture has been lost simply because of taking a chance instead of using thought and consideration for a few seconds before pressing the trigger.

### Reasons for Failure

Briefly let us consider some failures:—That person's head is almost cut off. Look at that church steeple leaning so much over to the left that it will fall over soon. That attempt at a seascape with the sea running uphill. That tree in the foreground of the landscape completely out of focus; so is the picture of what looks like a dog. In another spool there are some under- and some over-exposures. It makes those good negatives jolly expensive photography.

Well that is no exaggeration. It is the sort of work that the 'haphazard' amateur is producing every time a new spool finds its way into his camera and it can be remedied by adopting this method. Purchase a diary and record every shot you make with all the data possible. Such as Time of day, Sunny or not, Film in use, Stop and Exposure time, Distance from nearest object and so on.

### Points to Note

This may sound all unnecessary, but it will do more to help you to get 12 good negatives for every 12 exposures than anything else. The fact that you wish to record these items will cause you to watch the light, measure the distance, compose the picture, carefully consider the exposure and stop. You will most certainly use the view-finder to ensure getting everything in and correctly so. Surely with such care and thought it would be a surprise if the negative turned out faulty.

### Keep a Diary

If you are really keen on making a success of your photography this year and intend to make something worth while entering in a local exhibition or competition, be persuaded to take this question of a diary seriously. It is very helpful to turn to for reference when tackling similar subjects. It may just prevent an under- or over-exposure.

One of the best diaries is the Burroughs Wellcome, which contains stacks of useful information and includes a very reliable Exposure Meter. This is something every photographer should carry in his kit, for it takes many years experience to be able accurately to estimate the correct time required to get a perfect negative of the many subjects and varied conditions which we have to contend with when out on a photographic excursion.

The final hint relates to the storing of 'good' negatives. Some years ago the author worked with a man who started photography as a hobby when he was fairly well on in years but extremely keen on making a success of the work. In order to watch progress he decided to make a print from every exposure. He was faithful for one season only, for when

he realised how hopeless some of the work was and how costly, he began to consider other means for improvement and instead of making prints from poor negatives, he only kept the good results.

### Negative Storage System

This is the method suggested. Keep every negative in a separate envelope, and give it a title and a number. Include with these details on the outside of the envelope the date it was taken and all the data from the diary, plus any other data as regards the printing and developer used. The actual storing of negatives is very simple if the negatives are not allowed to accumulate. An index for quickly finding a special negative can be made on the following lines—Woodland Scenes 7, 27, 59, 101. Seascapes 37, 54, and so on.

## A Prize-winner in Canada

**H**ERE'S proof of the continued and lasting popularity of the fretwork designs published in these pages, as well as an interesting story behind their production. The worker you see in the picture is Mr. T. J. Dunn who lives at 27 Weir Street, S., Hamilton, Ontario, accompanied by his faithful Gem Fretmachine. The picture first appeared in a periodical called "The Harvester", published in Canada, with an interesting story. Tom Dunn is a retired worker who now finds much relaxation and many hours of pleasure with his fretsaw and Hobbies Designs. In a letter accompanying the picture Mr. Dunn tells us he won 1st Prize at the Great Canadian National Exhibition at Toronto and also in a Hobby Fair at his home town of Hamilton. This just shows you the lasting interest fretwork engenders because Mr. Dunn also won a 1st Prize at a Crystal Palace Exhibition (London) many years ago. He is proud of having made nearly every pattern in 1949 and hopes to be able to do the



Buckingham Palace Model. This was a large design we published before the war, but which is not now available because sufficient wood cannot be obtained. It is different in Canada. "There is", remarks Mr. Dunn "lots of work to it but we old timers can tackle anything from Hobbies!" At 69 years of age that is a very worthy sentiment which we can pass on to our younger readers.



## Improvements for your Wireless Set

### Station Separation

**W**OULD you please tell me the best thing I can do to cut out either the Home service or the Light programme on my crystal set? (A.C.—Cricklewood).

**M**OST crystal sets suffer from flat tuning because anything which is done to sharpen tuning, also reduces volume. However, a reasonable compromise is usually possible, and you can sharpen tuning by connecting a condenser in series with your aerial lead-in to the set. The smaller the capacity, the sharper will tuning become. A value of about .0001 mfd., to .003 mfd. is usual, but a variable or adjustable pre-set condenser is best.

Similar results can be achieved by taking the aerial to a tapping on the tuning coil. The nearer this tapping is to the earthed end of the coil, the sharper will tuning become. Alternately, wind a coil of about 30 turns near the tuning coil winding, and connect one end of this to the earth terminal. Take your aerial to the other end. By moving this winding away from the other winding, tuning may be sharpened.

In bad cases a wave-trap can be used. This is a second tuning coil with a tuning condenser wired in parallel, and the whole is connected in series with the aerial lead-in. The unrequired station can then be tuned out.

### Crystal Reception

**R**ECENTLY I have made a crystal set with a coil and slider. As an experiment, I have tried an old-fashioned rheostat (a coil of wire on a strip of cardboard, fitted round a piece of porcelain or ebonite, with the slider pivoted in the centre) in the circuit, also with a coil between the terminals, but I have heard nothing. Could you tell me if it is possible, if so, what should I do? (J.W.—Sittingbourne).

**T**HE rheostat would not contain sufficient number of turns to reach the wave-lengths of ordinary medium wave stations, and in view of the usual size of these components, it would be difficult to get on sufficient turns. In addition, the shape of the winding is not wholly suitable. It would be preferable to use a former of 1 to 1½ in. diameter, varnish same, and wind on about 150 to

200 turns of 32 S.W.G. enamelled wire. A strip pivoted at one end, could pass over the turns for tuning.

If other medium wave stations are received, but not the Light Programme, it appears your particular area is not well covered by this, as regards crystal-set reception. The long wave station may be more suitable. To receive this, you will need 200 to 300 turns on a former of 1½ in. diameter or more. Alternatively, a condenser (about .0005 mfd.) may be connected across the aerial and earth terminals to increase the wavelength tuned.

### Loudspeaker Strength

**I** HAVE built your 3-valve portable and can only get the Light Programme on earphones, but not on the loudspeaker. Please let me know if there is anything I can do to make the volume better. (A.L.—Falkirk).

**I**F you have used a 3 ohm speaker without transformer, this is undoubtedly the cause of the trouble, as a matching transformer is essential or volume will be most severely reduced. This transformer should be a speaker output transformer, suitable for use with a battery pentode output valve and 3-ohm speaker. (These details should be mentioned when obtaining to ensure the correct type is provided).

If the receiver howls with tuning condenser plates opened, this can normally be prevented by slightly reducing the H.T. voltage applied to the screen grid and detector, by using a lower battery tapping.

### Power Pack

**W**OULD you please inform me how to build a Power Pack for A.C. mains only; my set has H.T. + and H.T. — plugs, Grid Bias + and — plugs, and low tension. (R.L.—South Harrow).

**T**O obtain a current from the mains, you will need to wire a High Tension rectifier in series with one mains lead. Connect a smoothing condenser from positive on rectifier to other mains lead. Also connect a smoothing choke from positive rectifier tag H.T. positive on receiver. Connect a further smoothing condenser across the receiver H.T. leads.

Negative H.T. will be taken to the second mains lead. To reduce the voltage to 120 to 150, a resistor of about 50,000 ohms should be wired in series with the smoothing choke.

The voltage drop in a resistor depends upon the current taken which depends upon the type of receiver, so exact values for dropping resistors for grid bias, etc., cannot be given, as these are critical. Because of this G.B. and L.T. batteries may be retained, H.T. only being obtained from the mains.

### "Personal" Wireless Set

**A**S I am desirous of trying my hand at building a small 'personal' battery radio with a frame aerial, I am wondering whether you could perhaps supply particulars. (H.G.E.—Lancaster).

**Y**OU will be able to make a case of a size depending upon the number of valves (and size of batteries) used. If you use about 75ft. of wire (24 to 28 S.W.G.) for the Medium Wave frame aerial, this will be approximately correct. (The number of turns will, of course, depend upon the perimeter of the cabinet). If Long Waves are required, approximately 210ft. of wire (about 32 to 36 S.W.G.) can be used for the Long Wave winding. The M.W. turns may be spaced by about the diameter of the wire, to increase pick-up. Reaction will be essential, and the reaction winding should have about ¼ the turns on the M.W. winding.

One valve will provide fair earphone reception with about 28 to 30 volts high tension, but only when local stations are received. Two valves are preferable. For fair speaker reproduction, at least three valves will be necessary, and the H.T. voltage should be 60 or more. Grid Bias batteries may be used for H.T. with a torch cell for Low Tension, or the special small batteries may be purchased. It would probably prove best to make use of some of the special small valves intended for these sets, now cheaply available from ex-service stores.

The larger the diameter of the frame aerial, the greater will pick-up be. However, a 2 or 3 valver can be built, complete with batteries etc., in a cabinet about 5ins. by 5ins. by 2ins.

### Fairground Wheel—(Continued from page 371)

Small figures can be cut out of card, with advantage, as shown. Details need only roughly be inked in to give quite a reasonable impression and these card figures are held by leaving a tab at the back which is split and turned out at right angles—this being glued to the seat.

It might be thought an advantage and added attraction to have the Ferris wheel turned by a handle from a pulley.

This can easily be effected by putting a slice cut from a cotton reel on the end of one side of the protruding axle.

From this an elastic band is taken to a smaller disc at the bottom of the side upright, this second disc having a small handle attached—a short nail sticking through from the far side will do quite well. The smaller disc is attached by a short screw and keeps well aligned by

rubbing against the side of the upright.

The lower pulley is smaller than the one on the axle as the Ferris wheel must be rotated slowly to get a good effect and a smaller disc below puts in a what might be called a 'small gear', the wheel turning much more slowly than the little handle below is rotated. Do not attempt to turn the wheel quickly or disaster may result.

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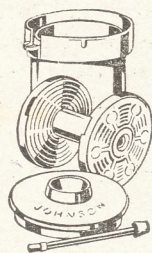
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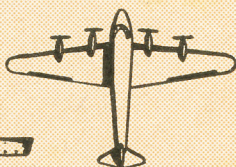
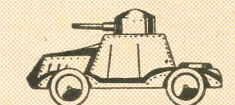
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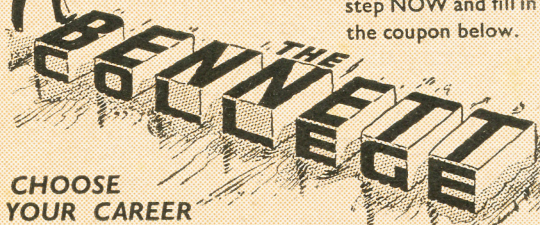
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